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**SUBJECT: RESPONSE TO REVIEW OF IRRIGATION SEASON SEMI-ANNUAL
MONITORING REPORT – SOUTHERN SAN JOAQUIN VALLEY WATER
QUALITY COALITION – KERN RIVER SUB-WATERSHED**

Staff Review

The Irrigation Season Semi-Annual Monitoring Report (SAMR) for the Southern San Joaquin Valley Water Quality Coalition's (SSJVWQC) Kern River Sub-watershed was submitted to the Sacramento Office of the Central Valley Regional Water Quality Control Board (Central Valley Water Board) on 28 February 2006. This report was submitted by the Kern River Sub-watershed to meet the requirements of Resolution R5-2003-0105 and the associated Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands (Conditional Waiver) adopted by the Central Valley Water Board on 11 July 2003.

Central Valley Water Board staff has reviewed the SAMR to evaluate the document for the required monitoring and reporting conditions detailed in Monitoring and Reporting Program Orders No. R5-2003-0826 and No. R5-2005-0833, the conditions set forth in the Kern River Sub-watershed's Monitoring and Reporting Program Plan (MRP Plan), the Quality Assurance Project Plan (QAPP), and to assess the quality of the data generated and the conclusions and recommendations presented.

The following SAMR review has been broken into three categories: 1) data quality, 2) data interpretation, and 3) compliance with the Conditional Waiver requirements.

DATA QUALITY

Item 1: Field data sheets are not included in the report. This problem was identified during the 2004 Annual Monitoring Report review. The Kern River Sub-watershed has acknowledged the problem and is proposing to meet with its contract laboratory (Fruit Growers Laboratories) to educate the laboratory on the need to provide separate field data

California Environmental Protection Agency

sheets, or to provide the required information on the Chain of Custody (COC) documents. Fruit Growers Laboratories (FGL) Quality Manual, which has been incorporated into the Kern River Quality Assurance Project Plan, does not contain any information regarding sampling, sample handling, or field measurements. The Coalition Group Monitoring and Reporting Program Order No. R5-2003-0826, Attachment A requires that field measurements include:

- Flow
- pH
- Electrical conductivity
- Dissolved oxygen
- Temperature

Item 2: Chain of Custody documentation was insufficient and not legally sustainable. With the exception of the 29 June 2005 sampling event, the COC documents have missing time between signatures and insufficient signatures to document an unbroken chain of custody. As described in the 2004 Annual Monitoring Report review, the COC needs to be performed in accordance with Attachment A of Resolution R5-2003-0826, pages 5 and 6. The Kern River Sub-watershed has identified the problem and will meet with FGL to discuss the required compliance.

Item 3: Laboratory data sheets (including bench sheets) were not included in the SAMR. As identified in the 2004 Annual Monitoring Report review, this information is especially important when questions arise regarding toxicity testing results. An example of this is the sediment toxicity testing conducted for the Main Drain sample collected on 10 February 2005 (75% survival). The toxicity test was started on 25 February 2005; 15 days after the sample was collected. Holding times for sediment samples vary from 14 days (ASTM, 1999), to less than 8 weeks (USEPA-USACE, 1998). Traditional convention has held that toxicity tests should be started as soon as possible following collection from the field.

The EPA guidance document *Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates* (March 2000) requires that for a test to be considered acceptable, it must have a minimum survival rate for the control group of 90%. The control group survival for the 10 February 2005 was 75%. It is unknown why the survival in the control group was so small or why the laboratory did not flag the test for failing the EPA guidelines.

In addition to the failure to meet the EPA guidelines for acceptability, the problem with the low control survival resulted in the sample mortality (75%) not being statistically significant. The number of test replicates strongly influences the results of the statistical testing. Aquatic Bioassay & Consulting uses the minimum (four) replicates for samples and controls. This number should be increased to eight to take into account possible variances due to mortality in the control group.

Item 4: Required metals analyses were not conducted for cadmium, lead, nickel, selenium, and arsenic. Nutrient analyses did not contain total Kjeldahi nitrogen (nitrate run instead) or phosphorus. Additionally, the reporting limit for boron was in milligrams per liter not

micrograms per liter and the practical quantitation limits (PQL) were too high for copper and zinc.

Item 5: Holding times were exceeded for all bacteria analyses. Total coliform bacteria values reported exceeded 2,420 MPN/100 ml (most probable number per 100 milliliters) for all but one sampling event. The exception to this practice was the 10 February 2005 sampling event, where the results were given as >23.0 MPN/100 ml for total coliform bacteria.

Item 6: Quality control sampling included one travel blank. No equipment blanks or field duplicates were collected as part of the quality control program. Attachment A of the Coalition Group Monitoring Order R5-2003-0826 requires that at a minimum, five percent equipment blanks and field duplicates must be analyzed.

Item 7: The pesticide use section of the SAMR consists of information presented for the top five pesticides, for the top five crops produced in Kern County. The list of materials used for each of the five crops is ranked based on number of pounds applied. No required pesticide use evaluation or database was included in the SAMR.

DATA INTERPRETATION

Item 8: The SAMR on page 7 contains the statement that, "*The Kern River Sub-basin is also unique in that water flows only away from the river and not discharges into it. Therefore, many of the traditional water quality issues associated with discharges are not applicable to the Kern River Sub-basin*". According to the Bureau of Reclamations, water from the Friant-Kern Canal, the Cross Valley Canal and its distributaries can, and under certain conditions do, discharge into the Kern River Channel (Environmental Assessment, Transfers and Exchanges of CVP Water from the Friant Division to Non-Central Valley Project Contractors and the Execution of Temporary, One-Year Contracts, Draft Final EA-02-35, 19 October 2005).

In addition to the Kern River, the Kern River Sub-basin also contains various other waters of the State, including Poso Creek. Poso Creek is used by various water agencies as a conduit to move water for direct recharge on facilities adjacent to the creek (page 12, paragraph 3 of the Kern River Sub-watershed's SAMR).

Item 9: The **Water Supply** section **E** of the Kern River Sub-watershed's SAMR (page 12) states, "*Cawelo Water District used Poso Creek to convey water for direct recharge on facilities adjacent to the creek. Cawelo Water District released a total of 5,872 acre-feet into Poso Creek for recharge during the months of June-April and November-December. North Kern Water Storage District also released 14,196 acre-feet of water into Poso Creek for recharge. During this time, the Semitropic Water Storage District cooperated with the Agency on conducting daily field observations of flows in Poso Creek near the Kern National Wildlife Refuge (KNWR). No flows were noted at the KNWR; therefore, the recharged water either evaporated or percolated prior to reaching the KNWR. As a result, the trigger for monitoring Poso Creek flows was not activated during the irrigation season.*"

On page 12 of the Kern River Sub-watershed's SAMR contains the statement that, *"In January, 2005, Regional Board staff traversed Poso Creek from Highway 99 on the east to near the Kern National Wildlife Refuge. Flows in Poso Creek were noted west of Gun Club Avenue, just east of the KNWR. A number of duck clubs exist in this area. Discussions with Semitropic Water Storage District suggest the flows in Poso Creek were mostly seepage from these duck clubs. Semitropic Water Storage District made deliveries to the duck clubs in October-November, 2004."*

- 1) Poso Creek, or a portion of Poso Creek, in conjunction with Semitropic Water Storage District and the North Pintail Slough Ditch, is used to convey water to a portion of approximately 5,000 acres of wetlands that are presently being used as private duck clubs (Pond-Shafter-Wasco Resource Conservation District).
- 2) In high water years, the North Kern Water Storage District diverts water from Poso Creek west of Highway 99. This diversion removes water from the creek after it has passed through miles of irrigated agricultural lands and prior to the sample trigger location.
- 3) Semitropic Water Storage District is capable of diverting water from Poso Creek into the Pond-Poso Canal located approximately four miles west of Highway 43. Again this diversion point is located up-stream of the sampling trigger location.
- 4) Central Valley Water Board staff actually traversed Poso Creek on 25 August 2005. Pictures supplied to the Kern River Sub-watershed as part of the Results of Review of Draft 2005 Irrigation Season Monitoring Report for the Kern River Sub-watershed (Appendix A) were taken at that time.

As evidenced by the above discussion, surface water does exist in Poso Creek during at least a portion of most years. Sampling of Poso Creek needs to be performed on a regular schedule whenever water is present in the system. The sampling trigger fails to take into account these factors. Currently, only when water reaches the complete end of the Poso Creek Flood Channel (the Kern Wildlife Refuge) is sampling triggered.

Additionally, of special note is the statements that, *Semitropic Water Storage District suggests the flows in Poso Creek were mostly seepage from these duck clubs. Semitropic Water Storage District made deliveries to the duck clubs in October-November, 2004.* Duck clubs are considered managed wetlands and are required to obtain coverage under the Conditional Waiver Program. Any discharges from the duck clubs are subject to the sampling requirements of the Conditional Waiver Program.

Item 10: The table contained in section **V. Data Interpretation** on page 14 needs to be revised. The value for *Ceriodaphnia* survival on 2/10/05 should be 80% not 100%. The value for *Pimephales* survival on 06/29/2005 should be 92.5%. The values for *Ceriodaphnia* survival on 07/27/05 should be 100% and 97.5% (sample run twice). The values for *Pimephales* and *Ceriodaphnia* survival for the 08/31/2005 sampling event should be 77.5% and 90%, respectively. Lastly, the value for *Pimephales* survival on 09/07/2005 should be 95%. The change in values does not affect the conclusion sections, as none of the revisions were statistically significant relative to their control. However, the changes do

need to be incorporated into the individual sample discussions, e.g. paragraph 2 on page 15 should be changed to reflect the 80% *Ceriodaphnia* survival on 2/10/05. Central Valley Water Board staff's review of the Draft SAMR failed to note these discrepancies, and consequently the Kern River Sub-watershed was not notified of the problem prior to submitting its SAMR.

Item 11: On page 15 of the Kern River Sub-watershed's SAMR, the statement is made, *"Since the Main Canal carries only drainage water, it is not surprising that the electrical conductivity of the samples is higher than that of the source waters."* According to the U.S. Fish and Wildlife Service's **Kern and Pixley National Wildlife Refuges Draft Comprehensive Conservation Plan and Environmental Assessment** (June 2004), *"Normally all CVPIA water destined for the Refuge is released from the California Aqueduct into the Buena Vista Water Storage District system and transported nearly 12 miles through the Buena Vista Water Storage District Main Drain canal to the Refuge boundary."* Additionally, on page 28 of the *Draft Comprehensive Conservation Plan and Environmental Assessment* it states, *"Early fall flood-up of Refuge habitat coincides with late irrigations of agricultural crops upstream from the Refuge along the Main Drain/Goose Lake Canal. During this period, the Refuge water supply is heavily affected by irrigation return flows into the system."* Based on these statements and on discussions with Mr. David Hardt, it is clear that the Main Drain Canal carries more than just drainage water.

Item 12: The discussion of sample 08/31/2005 on page 17 incorrectly identifies *Selenastrum* survival as 100%. The survival was actually less than 100% (correctly shown on the table on page 14), and was deemed statistically significant according to Aquatic Bioassay & Consulting Laboratories.

CONDITIONAL WAIVER COMPLIANCE

Certain aspects of the Conditional Waiver program may not have been completely addressed in the Watershed Evaluation, QAPP, and MRP Plan, and subsequently, were not included in the SAMR. While these documents have received prior approval by the Board, it is staff's position that additional information and/or actions should be undertaken at this time in order to fully comply with the Conditional Waiver Program. These actions include: the frequency of sampling, actions taken to address water quality impacts, management practices, proposed turbidity averaging period, and addition and changes to monitoring point locations.

Item 13: The frequency of sampling set forth in the Conditional Waiver program is **once a month during the irrigation season** and twice during the storm season. The irrigation season is when farmers (individuals for whom the Waiver Program was developed) are utilizing either surface or ground water to pre-irrigate, irrigate, or post-irrigate fields. The irrigation season is **not** just when water districts, irrigation districts, or canal companies are making water deliveries.

Item 14: Exceedance Reports are to be promptly submitted to the Water Board whenever a water quality exceedance occurs. In the case of the 31 August 2005 sampling event, the required Exceedance Report (Communication Report prior to August 2005) for *Hyalella* was

submitted to Mr. David Orth of the SSJVWQC on 19 October 2005. Apparently, a copy of the Exceedance Report was not sent to the Central Valley Water Board. The same exceedance report (13 August 2005) or a separate one should have also have addressed the Selenastrum toxicity. Monitoring and Reporting Program Order No. R5-2005-0833 requires that when the Coalition Group determines that water quality objectives are exceeded at the monitoring locations, the Coalition shall submit an Exceedance Report by email to designated Water Board Staff assigned to the Coalition Group (Alan Cregan at acregan@waterboards.ca.gov), or fax (916) 464-4780 in writing within next business day describing the exceedance, the follow-up monitoring, and analysis or other actions the Coalition Group may take to address the exceedance. Additionally, the Coalition Group shall submit a Communication Report within 45 business days of the Exceedance Report. The Communication Report will describe the follow-up monitoring and analyses that were conducted, what actions were taken to identify the source of the problem, complete analytical laboratory results, and a time schedule to identify and implement the Management Practice Effectiveness and/or other measures to correct the problem, and to submit an Evaluation Report.

The Kern River Sub-watershed is aware of the timing problem with Exceedance / Communication reports submittals and is working to address this issue. Additional effort may need to be taken to assure that information presented to the Coalition is passed on to the designated Water Board Staff assigned to the Coalition Group.

Item 15: Monitoring and Reporting Program Order No. R5-2005-0833 (page 3) requires that when the Coalition Group determines that water quality objectives are exceeded at a monitoring location, information on management practices will be collected and evaluated from Dischargers located in the area. Management practice data shall be collected in four broad areas; 1) pesticide mixing, loading, and application practices; 2) best management practices; 3) management practices to address other wastes (salt, sediment, nitrogen, etc.); and 4) irrigation and cultural practices. Information regarding management practices was not included in the Kern River Sub-watershed's SAMR.

Item 16: Problems with instructions/communications between the Kern River Sub-watershed and its contract laboratories were observed as part of the SAMR review. A Toxicity Identification Evaluation (TIE) was required to be performed on the sediment sample SWQ_STA 1 collected on 31 August 2005. The TIE was not run and the required resample was of the water column, not sediment. The Sub-watersheds decision not to involve the Central Valley Water Board when the situation was first encountered further compounded the problem. Clear and timely lines of communication need to be established between the laboratory, the Sub-watershed, and the Central Valley Water Board staff.

The Kern River Sub-watershed's SAMR Conclusions and Recommendations section (**Laboratory and Sampling Errors and Follow-up**) describe the errors encountered and actions to correct the identified problems. The proposed solutions appear to be generally sufficient to address Central Valley Water Board staff's concerns with regards to laboratory problems. However, **Items 3** (second paragraph), **4, 5, and 6** that are described above will need to be incorporated into the SAMRs follow-up section.

Item 17: The proposed averaging period for establishing turbidity levels in the Main Drain waters that has been put forth on page 16 of the Kern River Sub-watershed's SAMR is acceptable. However, the results of the study are subject to the Central Valley Water Board's review and approval.

Item 18: The Kern River Sub-watershed's time line for relocating the Poso Creek monitoring site is too long. It is unclear why such a long period of deliberation (six months) is necessary to decide to move a site that has always been dry. Based on Central Valley Water Board staff's observations and on information provided in the Kern River Sub-watershed's SAMR, water exists for at least a portion of the year in Poso Creek west of the current sampling point (see **Item 9** on page 4). This water needs to be sampled.

Item 19: In December 2005, Central Valley Water Board staff visited sod farms in Cummings Valley. At that time, sheet-flow and storm-water drainage was observed discharging into Chanac Creek from irrigated agricultural property. Active erosion of irrigated agricultural lands was also noted resulting in highly turbid surface-water flows entering into Chanac Creek. The responsible parties were directed to comply with the provisions of the Conditional Waiver Program and have subsequently provided evidence of membership in the SSJWQC. Therefore, the Kern River Sub-watershed needs to revise its Monitoring and Reporting Program Plan and establish sampling point(s) and an associated sampling schedule for Chanac Creek in Cummings Valley.